Continuous Peer Tutoring Dynamics: An Effective Educational Future Reform
Sumera Malik*, Munazza Mahmood†, Adil T Paracha‡, Malik Faisal Azeem§

Abstract
The present investigation focused upon peer tutoring (PT) as a more practical solution to the living problems of the Pakistani educational setup. PT program's popularity lies in its more practical nature in terms of learners' high academic output through better cognition and social construction of learners' behavior. Conceptual framework of diversified learning was used and experimental group's students were treated with PT for six month. It was an experimental study having two-group post-test-only randomized experimental design. Experimental group was found significant in their academic improvement than the other group. The study suggests PT if introduced in Pakistani can play productively in engaging students with great potential and energy to support struggling students raising academic achievement. Veiled teachers in the Pakistani set up would have a better choice to fill up gaps in their classroom teaching practices.

Keywords: peer tutoring, effective teaching, tutor, tutee, learning, instructional design.

Introduction
There is a wide diversity of learning theories to address a variety of the students and situations which they find complex (Mergel, 1998). Teachers follow varied instructional schemes and their scheme is governed by the relevant theory they are inspired of. Three major paradigms of learning are; Cognitivism, Behaviorism, and Constructivism. Here feedback also plays its valuable part in assuring the response precision and also act as an initiator (Good & Brophy, 1990). Jean Piaget and others of the same school of thought consider child cognitive development taking place as a series of phases but research

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studies of the latter half of 20th century deviate from this belief and provided enough relevant evidence to support this belief (Shrager & Siegler, 1998). McLeod relating the concepts of Pavlov, Watson, Skinner, Thorndike, Bandura, Maslow, and Treisman states that behaviorism lay emphasis on the part individual’s environmental elements in manipulating behavior, even undermining the role of his inherent or inborn features (McLeod & Chaffee, 2017). Vygotsky, a strong advocate of social constructivism arranges a context for intellectualizing inspiration as communally exchanged by the class contributors as learners (Sivan, 1986), therefore Vygotsky distinguishes peer tutors as additional instructors (Topping, 2005) providing such a stimulus to learners to learn better. His belief popularized the concept of peer help as tutors or instructors helping their progress in academics and in other dimensions of learners’ overall intellectual development.

The impact of subdivisions in peer cultures and adaptations from one generation to the next also appear influential (Abouda, Badri, & Mrabet, 2016). Peer-tutoring also provides an effective platform for students to practice and improve language (Sharif et al., 2012), Mathematics, Chemistry (Parkinson, 2009), Biology (Ullah, Tabassum, & Kaleem, 2018), Science (Topping, 2005), impaired learners (Scruggs & Richter, 1988), physical education skills (Barrett, 2005), problem-based learning (Schmidt, Van Der Arend, Kokx, & Boon, 1994). It can also benefit at large in the field of health (Johnson et al., 2019) like oral health of students, higher education (Pugatch & Wilson, 2018), and English (Rizve, 2012).

**Literature Review**

*A Learner-Friendly and Learning-Building Instructional Approach*

Research market in the west has been busy in exploring new and better ways of supplementing learners with more practical learner-friendly learning support. People and social groups require such a practical strategies that can reduce their risk factor and adjust to complex situations in a better manner (Feng, Hossain, & Paton, 2018). addressing varied behavioural issues of the learners as public achievement (Topping, 2005). Typically, PT is a thoughtful instructional method of coaching pupils (Damon & Phelps, 1989) in progressive interactions between two individuals who imitate each other's actions in levelled communal collaboration (Kory-Westlund & Breazeal, 2019). Advancements in the educational research has introduced social robots, intended to play the role of students’ peers, their tutors, and instructors assisting learners in studying a range of subjects (Kory-Westlund & Breazeal, 2019;
Belpaeme, Kennedy, Ramachandran, Scassellati, & Tanaka, 2018). They may comprise; improving language (Gordon, 2016; Kory & Breazeal, 2014; Melzoff, Kuhl, Movellan, & Sejnowski, 2009; Rintjema, van den Berghe, Kessels, de Wit, & Vogt, 2018), developing math skills (Clabaugh, Ragusa, Sha, & Matarić, 2015; McColl-Kennedy et al., 2015, enhancing reading skills (Gordon, Breazeal, & Engel, 2015), sharpening social skills (Belpaeme, Kennedy, Ramachandran, Scassellati, & Tanaka, 2018), creating learners’ sense of curiosity(Gordon et al., 2015), with a pattern of attitude that focuses on growth (Parkinson, 2009), and even improving learners’ writing script(Hood, Lemaignan, & Dillenbourg, 2015). A wide range of related researches on the diversity of PT program provide confidence to the western educationists to get benefitted by it at all educational levels. It is now becoming a most common and cost effective instructional choice.

An Effective Learning Practice

Teachers having knowledge of human development and learning can best arrange the effective learning practices. Studies have exposed learners’ making better and more willing effort when in a positive environment (Liem, Bosch, Arends, Heijenbrok-Kal, & Hunink, 2007). A study notified dissimilarities in peer relationships, talents to solve problems, and learning assurances (Willis, Bland, Manka, & Craft, 2012) but most studies in the field endorsed the worth of the Cross-Age tutoring (CAT) to get educational as well as communal welfares (Iyer, 2011). Collaborative problem solving (CPS) help learners prepare themselves better to face future challenges (Cukurova, Luckin, Millán, Mavrikis, & Spikol, 2017) and intellectual arrangements include; examining, exploring, consulting, calculating, thinking, and determining (Zhu, 2006). Factors causing restrictions in work progress are; peers’ age, their character, and group’s type (Harris, 1995);(Hartup, 1983). Moreover, in the PT tutoring programs curriculum content is mostly the major factor to be concentrated on (Topping, 1996). Academically, gains of PT embrace the learners’ expression and shaping queries to get evidence to understand the subject matter (Bailey et al., 2018).Peer tutor’s role as a cross-age tutor or peer helper in the classroom develop understanding of the instructional abilities(Hayat & Wahyu, 2018) and inspires their knowledge about themselves (Bernal 2018).It is when they collaborate with each other in a controlled environment of PT tutoring sessions with consistent supervision of their teacher or instructor.
Methodology

Conceptual Model

The conceptual model of the diversified learning (Malik, 2019) was based on Vygotsky’s theory of Social Constructivism embedded with Piaget’s Cognitivism and both of the psychologists were firm believers in constructivism. Cognitivism perceives knowledge as representative, intellectual structures in the learners’ mind and develops as a result of learning (Piaget, 1955), whereas constructivism relates individual’s construction of learning for himself based on his social interactions (David, 2014). It considers learning as a process of social development that comprises; language, real world situations, collaboration and association amongst students. The students reserve the highest attention in the overall learning procedure (Özer, Özer, & Özer, 2004). Piaget believes that learners have certain understanding of their settings, and they develop certain deviations in their attitude depending upon their social experiences and differences between what knowledge they achieve presently and previously from their environments (MacLeod, 2009). Both theories work together in integration to provide expanded learning prospects to the peers (tutor and tutee) involved in the PT program. The study was experimental and two-group post-test-only randomized experimental design was opted. The two groups were distributed randomly, each containing 30 participants of class 9th. The treatment group was treated with PT method while control group was taught decided 6 units of Geography with the routine instructional method for a period of one term. Participants’ former academic scores were acquired as the baseline scores. The researcher used these scores to determine the difference between the treatment and control groups once the PT treatment on the treatment group was over. t-test was applied to compare the two groups by calculating the means’ difference between them (Trogim, 2006).
**Post Test-Only**

Table 4.2.1. Post-test: Group Statistics

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posttest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>30</td>
<td>75.00</td>
<td>16.905</td>
<td>3.086</td>
</tr>
<tr>
<td>Control</td>
<td>30</td>
<td>63.73</td>
<td>21.817</td>
<td>3.983</td>
</tr>
</tbody>
</table>

Table 4.2.2. Post-test: Level of Significance

<table>
<thead>
<tr>
<th>Levine’s Test for the Equality of Variance</th>
<th>t-test for equality of means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variance assumed</td>
<td></td>
</tr>
<tr>
<td>f</td>
<td>Sig.</td>
</tr>
<tr>
<td>1.999</td>
<td>.163</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variance not assumed</td>
<td></td>
</tr>
</tbody>
</table>

Objective 1: To study the effect of PT on students’ academic progress at secondary level in Pakistan.

Objective 2: To study the difference in the effect of PT on students’ academic progress at secondary level in Pakistan.

H₀: There is no significant effect of PT on peer- students’ academic progress.

H₀²: There is no significant difference between the academic progress of pupil group treated with PT and that not treated with it.

Table 4.2.1. and 4.2.2. represent the group statistics regarding post-test only keeping in eye study’s objective 1, 2 and hypothesis 1, 2. It shows the calculated values of mean, standard deviation and standard error mean of both groups. Both groups’ mean scores difference is 11.267 based on the t-test conducted for the equality of means which seems reasonably significant expressing treatment groups’ better performance than the other in comparison. The computed data reveals a higher mean score for the treatment group as compared to that of the control group. The significance level in accordance to Cronbach alpha for two-tailed test is recorded as .029 that is less than the standard level of .05, therefore the effect of PT is significant.
**Previous Achievement Scores**

Previous achievement scores of all subjects of both groups were also attained for reference before the conduct of the experiment. The scores were figured out for the clarity of previous academic situation of both groups. The data attained reveals the statistics as under:

<table>
<thead>
<tr>
<th>Previous Achievement Scores</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>experimental</td>
<td>30</td>
<td>52.87</td>
<td>16.933</td>
<td>3.092</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>49.13</td>
<td>22.134</td>
<td>4.041</td>
</tr>
</tbody>
</table>

**Table 4.3.2. Previous Achievement Scores Significance Level**

<table>
<thead>
<tr>
<th>Levene’s Test for equality of Variance</th>
<th>t-test for equality of means</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREVIOUS ACHIEVEMENT SCORES</td>
<td></td>
</tr>
<tr>
<td>Equal variance assumed</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>.02</td>
</tr>
<tr>
<td>Sig.</td>
<td>.734</td>
</tr>
<tr>
<td>t</td>
<td>58</td>
</tr>
<tr>
<td>Df</td>
<td>.466</td>
</tr>
<tr>
<td>Mean difference</td>
<td>3.733</td>
</tr>
<tr>
<td>Std error difference</td>
<td>5.088</td>
</tr>
<tr>
<td>Equal variance not assumed</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>.734</td>
</tr>
<tr>
<td>Sig.</td>
<td>85</td>
</tr>
<tr>
<td>t</td>
<td>1.466</td>
</tr>
<tr>
<td>Df</td>
<td>3.733</td>
</tr>
<tr>
<td>Mean difference</td>
<td>5.088</td>
</tr>
</tbody>
</table>

The group data (Table 4.3.1., 4.3.2.) of the pre-test taken as reference to students’ previous performance also show the calculated values of mean, standard deviation and standard error mean of the two groups. The related data reveals that the mean score of experimental group higher than that of the control group but the difference is nominal. T-test for the equality of means shows that the difference in the mean scores of the two groups is only 3.733 that is quite less to show that the performance of the treatment group as well as that of the control group before the application of PT on experimental group was not very different. The level of significance for pre-test remained .466 which is not significant as it is above the standard level of .05. It further shows that the academic state of achievement for both of the groups according to their first term test scores was almost the same, so their difference was not significant.
Discussion

PT is considered a productive teaching approach in addressing pupils’ academic gaps that also supports in mending their behavioral ailments. In Pakistani educational settings PT appears to be integrated in the educational organization of higher institutions of education as students’ combine study culture exclusively in the course of; examination, projects, or presentations. Previous studies (Gottfried, Garcia, & Kim, 2019; Haas, Vannest, & Smith, 2019; Leung, 2019) reveal that a higher rate to use PT as an instructional support for students enhance their social abilities. Present study like many previous investigations in the field of educational research reflects that with PT learners requiring counteractive instructions are capable of coaching each other more meaningfully (Terrión & Leonard, 2007) and it also allows to include learners of the secondary level having crucial cognitive incapacities (Malone, Fodor, & Hollingshead, 2019). Earlier investigation exposed teen age pupils’ with learning disabilities (LD’s) performing better skills of writing in PT even not requiring more resources (Grünke, Saddler, Asaro-Saddler, & Moeyaert, 2019) as the present study displayed. The worth of peer tutoring program is diverse. Teachers opt effective strategies to make their instructional sessions relaxing and entertaining, arranging for additional learning opportunities for their pupils.

Conclusions

The subjects of experimental group were treated with PT strategy for a period of six months, therefore they improved academically. The mean score value difference of both groups clarified better academic progress in the experimental group as compared to the comparison group. It was also seen that better and more positive interaction of subjects in the experimental group resulted in comparatively better progress in their academics. The comparative or control group could not perform as better as the experimental group, being devoid of PT application. Their useful routine contact during experiment sustained their academic progress throughout.

Recommendations

PT can make students to be more responsible for their academics and also be willing to support others in their academic progress. PT should be introduced on wider scale in Pakistan as pupils need to be developed as leaders to play beneficially in the society. The deficiencies in teaching skills can be recovered through introducing PT programs on
wider scale. These programs can be effective in overcoming the disasters of teacher performance insufficiency as a result of fragile educational system mainly in countryside and generally in cities.

Research Implications

PT would provide a respectable prospect for learners to perform constructively in their educational institution which can also be a side earning source to them to fulfill their study expenditure. It will help them work on the academic and personality issues of the new generation. Teachers in the Pakistani set up would have a better choice to fill up gaps in their classroom teaching practices and also manage well the shortage of time crises while syllabi coverage.

References

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